EXPERIMENT FORMAT

EXPERIMENT TITLE

IDENTIFICATION NUMBER:

Each experiment has a unique identifier that consists of two parts. Part 1 consists of the Reactor Name, Reactor Type, Experiment Type and a Three Digit Numerical Identifier. Part 2 of the identifier begins on a separate line and includes the Measurement Type(s). Identifiers take the following form:

(Reactor Name)-(Reactor Type)-(Experiment Type)-(Three-Digit Numerical Identifier)
(Measurement Type(s))

Identifier elements and their meanings are given below.

REACTOR TYPE		EXPERIMENT TYPE		MAIN MEASUREMENT TYPE	
Pressurized Water Reactor	PWR	Experimental Facility	EXP	Critical Configuration	CRIT
VVER Reactors	VVER	Power Reactor	POWER	Subcritical Configuration	SUB
Boiling Water Reactor	BWR			Buckling & Extrapolation Length	BUCK
Liquid Metal Fast Reactor	LMFR			Spectral Characteristics	SPEC
Gas Cooled (Thermal) Reactor	GCR			Reactivity Effects	REAC
Gas Cooled (Fast) Reactor	GCFR			Reactivity Coefficients	COEF
Light Water Cooled and Moderated Power Reactor	LWR			Kinetic Measurements	KIN
Heavy Water Cooled and Moderated Power Reactor	HWR			Reaction Rate Distributions	RRATE
Molten Salt Reactor	MSR			Power Distributions	POWDIS
Research Reactor	RESR			Nuclide Composition	ISO
Fundamental	FUND				

Examples of identifiers are:

ZPR-LMFR-EXP-001
CRIT-SPEC-REAC-COEF-KIN-RRATE

This identifier corresponds to the first evaluation of measurements that were made on the ZPR liquid metal fast reactor experimental facility. The critical configuration, spectral measurements, reactivity measurements and coefficients, kinetic parameters, and reaction rates were measured.

VENUS-PWR-EXP-001
CRIT-BUCK-RRATE

This identifier corresponds to the first evaluation of measurements that were made on the VENUS pressurized water reactor experimental facility. The critical configuration, buckling & extrapolation length, and reaction rate measurements were measured.

ZR6-VVER-EXP-001
CRIT-BUCK-SPEC-REAC-COEF-RRATE

This identifier corresponds to the first evaluation of measurements that were made on the ZR-6 VVER experimental facility. The critical configuration, buckling & extrapolation length, reaction rate, spectral measurements, reactivity measurements and coefficients, and reaction rates were measured.

KEY WORDS:

A list of words that describe key features of the experiment is provided.

A link to the summary information table as defined on pages 3 and 4 (kept in a separate file) should be provided here

Summary information for IRPhE Experiment
(to be used for the report containing inventory of experiments and as link from the first page of the evaluation).

1. Experiment identification number
2. Date
3. Name of experiment
   - 3.1. Scope of experiment
   - 3.2. Purpose and phenomena tested:
4. Name or designation of experimental programme
5. Description of test facility
6. Description of test or experiment
   - 6.1. Experimental configuration
     - 6.1.1. Type of assemblies
       - Zoned assembly
       - Clean benchmark assembly
       - Engineering benchmark assembly / engineering mockup core
       - Special purpose assemblies
     - 6.1.2. Assembly details
       - 6.1.2.1. Type
       - 6.1.2.2. Fuel
       - 6.1.2.3. Moderator
       - 6.1.2.4. Absorbers
       - 6.1.2.5. Critical mass
       - 6.1.2.6. Core volume
       - 6.1.2.7. Blanket
       - 6.1.2.8. Reflectors
       - 6.1.2.9. Reactivity adjustment
       - 6.1.2.10. other
     - 6.1.3. Assembly variants
   - 6.2. Core lifecycle
     - BOL
     - EOL
     - other
   - 6.3. Experimental limitations or shortcomings -
7. Phenomena tested
   - 7.1. Description of results and analysis:
     - 7.1.1. Data measured
       - 7.1.1.1. Critical level of moderator
       - 7.1.1.2. Reaction rates / ratios
         - Capture
         - Fission
         - Etc
       - 7.1.1.3. Reactivity worth
         - Of samples
         - Expansion worth
         - Voided zone
       - 7.1.1.4. Sample Doppler reactivity
       - 7.1.1.5. Temperature coefficients
       - 7.1.1.6. Control rod or rod-banks worths
       - 7.1.1.7. Gamma heating distributions
       - 7.1.1.8. Neutron spectrum
       - 7.1.1.9. Kinetic parameters
       - 7.1.1.10. Reactor power distribution measurements
       - 7.1.1.11. Isotopic measurements
   - 7.2. Special features and characteristics of experiment
     - 7.2.1. Hydrogen atoms versus atoms of heavy nuclides
     - 7.2.2. Moderator/Fuel ratio
     - 7.2.3. Spectral index
   - 7.3. Measurement system and uncertainties:
8. Counterpart experiments / other related experiments
9. Status
10. References (pointer to evaluation, archive if available, otherwise generic bibliographic reference)
11. Authors/ organisers
    - 11.1. Establishment
    - 11.2. Staff involved in experiment
    - 11.3. Contact
    - 11.4. Reviewers of compiled data:
12. Material available
    - 12.1. Data and Format:

Status of Compilation / Evaluation / Peer Review

Chapter	Page	Compiled	Independent Review	Working Group Review	Approved
1.0 Detailed Description					
1.1 Description of the Critical or Subcritical Configuration					
1.2 Description of Buckling and Extrapolation Length Measurements					
1.3 Description of Spectral Characteristics Measurements					
1.4 Description of Reactivity Effects Measurements					
1.5 Description of Reactivity Coefficient Measurements					
1.6 Description of Kinetics Measurements					
1.7 Description of Reaction Rate Distribution Measurements					
1.8 Description of Power Distribution Measurements					
1.9 Description of Isotopic Measurements					
Chapter	**Page**	**Evaluated**	**Independent Review**	**Working Group Review**	**Approved**
2.0 Evaluation Of Experimental Data					
2.1 Evaluation of Critical or Subcritical Configuration Data					
2.2 Evaluation of Buckling and Extrapolation Length Data					
2.3 Evaluation of Spectral Characteristics Data					
2.4 Evaluation of Reactivity Effects Data					
2.5 Evaluation of Reactivity Coefficient Data					
2.6 Evaluation of Kinetics Data					
2.7 Evaluation of Reaction Rate Distributions					
2.8 Evaluation of Power Distribution Data					
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Chapter	**Page**	**Compiled**	**Independent Review**	**Working Group Review**	**Approved**
3.0 Benchmark Specifications					
3.1 Critical or Subcritical Configuration Benchmark Specifications					
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Chapter	Page	Compiled	Independent Review	Working Group Review	Approved
4.0 Results of Sample Calculations					
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Chapter	**Page**	**Compiled**	**Independent Review**	**Working Group Review**	**Approved**
5.0 REFERENCES					
Appendix A: Computer Codes And Cross Sections					

1.0 DETAILED DESCRIPTION

This section should start with a brief description of the scope and objectives of the experiment carried out.

A detailed description of the experiments and all relevant data are provided in the appropriate subsection within this section. Enough information should be given in this section so that the derivation of data in Section 3.0 is evident. In general, modeling (idealization, simplification) of the experiment is not discussed here. However, if the exact experimental configuration is unknown (was not reported) or was too complicated to describe in detail and an idealization was provided by the experimenters, then the idealized model of the experiment may also be discussed here, or in Section 3.1.X. Any discussion of a model includes an explanation of the assumptions used in going from the real experimental configuration to the ideal configuration.

Sources of data include published reports, logbooks, photographs, memos or other records provided by experimenters, and discussions with experimenters. Any inconsistencies in the data are mentioned in this section. A justification as to why the data can still be used is provided in the Evaluation of Experimental Data section (Section 2.0). Uncertainties in the measurements that were assigned by the experimenters, either in published or unpublished (i.e., logbooks) sources should be included. Details of the geometry and material used in the experiments will often be given in Section 1.1. However, additions and modifications to the geometry specified in Section 1.1 and additional materials that are introduced for each particular measurement must be described in detail.

1.1 Description of the Critical or Subcritical Configuration

This section contains a detailed description of the critical and / or subcritical configuration.

1.1.1 Overview of Experiment

An overview of the experiment is given. The conclusions of the Evaluation of Experimental Data section, Section 2, should be briefly stated. (e.g., “Twenty experiments were evaluated, but only 12 are judged to be acceptable for use as reactor physics benchmark experiments.”)

1.1.2 Description of Experimental Configuration

This section contains the description of the physical arrangement and dimensions of the experiment. The method of determining the critical condition is stated. Uncertainties in measurements, if known, are also given. Data are given in original published units; however, evaluators are encouraged to parenthetically provide SI units immediately following the original units.

Subcritical measurements may require more detailed information about the source and detectors than is typically required for critical assemblies.

1.1.3 Description of Material Data

This section contains a detailed description of the materials used in the experiment as well as significant materials in the surroundings. Uncertainties in material compositions, if known, are also given. If there is relevant reactivity information included in the experiment documentation that pertains to the *materials* used in the experiment, it is also provided in this section.

1.1.4 Additional Information Relevant to Critical and Subcritical Measurements

Additional information that is relevant to critical and subcritical measurements is presented in this section. Subcritical measurement must include a description of the measurement technology and a discussion on the interpretation of the measurements as well as the measured data.

1.2 Description of Buckling and Extrapolation Length Measurements

This section contains a detailed description of any Buckling and/or Extrapolation Length measurements that were made. Subsections that present the methods followed by the results are presented for each measured parameter (e.g. Section 1.2.1 should contain a detailed description of the method used to determine a particular measured parameter and Section 1.2.2 should contain the results obtained by this method. This pattern should be repeated for each method and / or measured parameter in this section.)

1.3 Description of Spectral Characteristics Measurements

This section contains a detailed description of any measurements that were made to determine spectral characteristics such as neutron spectra or $^{235}U_f$ / $^{238}U_c$ ratios. Subsections that present the methods followed by the results are presented for each measured parameter.

1.4 Description of Reactivity Effects Measurements

This section contains a detailed description of measurements such as control-rod worth, void effects, small-sample worth, fuel substitution, and xenon effects. Subsections that present the methods followed by the results are presented for each measurement type. Uncertainties in the measurements that were assigned by the experimentalists, either in published or unpublished (i.e., logbooks) sources should be included and group parameters of delayed neutrons.

1.5 Description of Reactivity Coefficient Measurements

This section contains a detailed description of measurements such as the temperature coefficient of reactivity, $\partial\rho/\partial T$; the moderator height coefficient of reactivity, $\partial\rho/\partial H$; and the boron coefficient of reactivity, $\partial\rho/\partial C_B$. Subsections that present the methods followed by the results are presented for each measured parameter.

1.6 Description of Kinetics Measurements

This section contains a detailed description of measurements such as decay constants, β_{eff}, or prompt neutron lifetime. Subsections that present the methods followed by the results are presented for each measured parameter.

1.7 Description of Reaction Rate Distribution Measurements

This section contains a detailed description of measurements that were made to generate flux maps, fission chamber scans, and wire activation fine-structure and macro-structure. Subsections that present the methods followed by the results are presented for each measured parameter.

1.8 Description of Power Distribution Measurements

This section contains the results of power distribution measurements and a detailed description of the methods used.

1.9 Description of Isotopic Measurements

This section contains a detailed description of isotopic measurements of discharged fuel.

2.0 EVALUATION OF EXPERIMENTAL DATA

Missing data or weaknesses and inconsistencies in published data are discussed in this section. The effects of uncertainties in data on the measured parameters are discussed and, if practical, quantified. Use of data with large uncertainties or data that require assumptions on the part of the evaluator is justified in this section. If all or part of the data is found to be unacceptable for use as benchmark data, this fact is noted in this section, and the reasons are summarized. Indication should be given on how data were handled. The evaluation process for the unacceptable data is terminated at this point (i.e., unacceptable data are not included in Sections 3.0, 4.0, and Appendix A).

2.1 Evaluation of Critical or Subcritical Configuration Data

This section contains an evaluation of the critical or subcritical configuration data described in Section 1.1

2.2 Evaluation of Buckling and Extrapolation Length Data

This section contains an evaluation of the Buckling and Extrapolation Length Measurements described in Section 1.2.

2.3 Evaluation of Spectral Characteristics Data

This section contains an evaluation of the Spectral Characteristics Measurements described in Section 1.3.

2.4 Evaluation of Reactivity Effects Data

This section contains an evaluation of the Reactivity Effects Measurements described in Section 1.4.

2.5 Evaluation of Reactivity Coefficient Data

This section contains an evaluation of the Reactivity Coefficient Measurements described in Section 1.5.

2.6 Evaluation of Kinetics Data

This section contains an evaluation of the Kinetic Measurements described in Section 1.6.

2.7 Evaluation of Reaction Rate Distributions

This section contains an evaluation of the Reaction Rate Distributions described in Section 1.7.

2.8 Evaluation of Power Distribution Data

This section contains an evaluation of the power distribution measurements described in Section 1.8.

2.9 Evaluation of Isotopic Measurements

This section contains an evaluation of the isotopic measurements described in Section 1.9.

3.0 BENCHMARK SPECIFICATIONS

Benchmark specifications describe the data that are necessary to construct a calculational model. Data that were determined to be acceptable as benchmark-model data are provided in Sections 3.1 through 3.9 of each evaluation. In general, a description of the calculational methodology and the model (Section 3.X.1); dimensions (Section 3.X.2); material data (Section 3.X.3); temperature data (Section 3.X.4); and the experimental value of each parameter and the benchmark value of each parameter, with the associated uncertainty, (Section 3.X.5) should be included in each of Sections 3.1 through 3.9. Detailed sketches of each model should always be included.

Except for critical or subcritical configurations, there are, in general, widely differing approaches that can be used to analytically model reactor physics measurements. The models described in the following subsections are only representative of the approach taken by the evaluator.

3.1 Critical or Subcritical Configuration Benchmark Specifications

This section contains benchmark specifications for the Critical or Subcritical Configuration described in Section 1.1. Specifications sufficient for both Stochastic and Deterministic benchmark models should be provided.

3.1.1 Description of the Calculational Methodology and the Model

A concise description of the model is given in this section. Any simplifications and approximations made to geometric configurations or material compositions are described and justified. If an idealized model developed by the experimenters is described here, discussion of the model includes an explanation of the assumptions used in going from the real experimental configuration to the ideal configuration.

3.1.2 Dimensions

All required dimensions are included in this section. Where possible, dimensions are given to five significant figures.

3.1.3 Material Data

Atom densities for all materials are concisely listed in this section. Lists are broken into subheadings such as core, structural, and reflector materials. Unique or complicated formulas for deriving atom densities are provided. All constituents of the materials used in the experiment description are included, or a justification for leaving them out is provided. (Materials that are not included are, in most cases, replaced with void.) Atom densities are listed in scientific notation with five significant digits.

3.1.4 Temperature Data

Temperature data about the experiment and about the model are provided in this section.

3.1.5 Experimental and Benchmark-Model k_{eff} and/or Subcritical Parameters

The experimental k_{eff} and its reported uncertainty (if available) are given in this section. If the experimenters simply indicate that the system was critical, a k_{eff} of 1.0 is assumed. If the effects of actual experimental parameters are carefully quantified, either by experiment or by calculation, and if these parameters are omitted from the benchmark specification, an adjusted "benchmark-model k_{eff}" may also be included in this section. These adjustments must be relatively small. Items that have a significant effect on calculated k_{eff} values are not omitted from the benchmark specification data. An uncertainty for the benchmark-model k_{eff}, based on parameter sensitivity studies or experimental estimates, is also included.

Additional benchmark model parameters, such as spectral ratio, variance-to-mean, decay constant, or count-rate ratio values, are included for subcritical measurements as well as for interpreted k_{eff} values.

3.2 Buckling and Extrapolation Length Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the Buckling and Extrapolation Length Measurements described in Section 1.2. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.3 Spectral Characteristics Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the Spectral Characteristics Measurements described in Section 1.3. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.4 Reactivity Effects Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the Reactivity Effects Measurements described in Section 1.4. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.5 Reactivity Coefficient Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the Reactivity Coefficient Measurements described in Section 1.5. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.6 Kinetics Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the Kinetic Measurements described in Section 1.6. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.7 Reaction Rate Distribution Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the Reaction Rate Distributions described in Section 1.7. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.8 Power Distribution Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the power distribution measurements described in Section 1.8. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

3.9 Isotopic Benchmark Specifications

This section contains benchmark specifications for the models that were developed in this evaluation for the isotopic measurements described in Section 1.9. The subsections (3.X.1 — 3.X.5) that are illustrated in Section 3.1, above, are also included in this section.

4.0 RESULTS OF SAMPLE CALCULATIONS

Calculated results obtained with the benchmark-model specification data given in Section 3.0 are tabulated in this section. Details about the calculations, including input listings, are given in Appendix A. (A.1 through A.9)

4.1 Results of Calculations of the Critical or Subcritical Configurations

Calculated k_{eff} values are presented in this section. Additional calculated parameters, such as spectral ratio, variance-to-mean, decay constant, or count-rate ratio values, are included for subcritical measurements as well as interpreted k_{eff} values.

4.2 Results of Buckling and Extrapolation Length Calculations

Calculated buckling and extrapolation length values are presented in this section.

4.3 Results of Spectral Characteristics Calculations

Calculated Spectral Characteristics are presented in this section.

4.4 Results of Reactivity Effects Calculations

Calculated Reactivity Effects are presented in this section.

4.5 Results of Reactivity Coefficient Calculations

Calculated Reactivity Coefficient values are presented in this section.

4.6 Results of Kinetics Parameters Calculations

Calculated kinetics parameters are presented in this section.

4.7 Results of Reaction Rate Distribution Calculations

Calculated reaction rate distributions are presented in this section.

4.8 . Results of Power Distribution Calculations

Calculated power distributions are presented in this section.

4.9 Results of Isotopic Calculations

Calculated isotopic concentrations are presented in this section.

5.0 REFERENCES

All published documents referenced in the evaluation that contain relevant information about the experiments are listed

APPENDICES

Supplemental information that is useful, but is not essential, to the derivation of the benchmark specification or the interpretive calculations is provided in appendices. Appendices are labeled using letters (e.g., Appendix A). Appendix A is reserved for a detailed description of the codes and cross section data used in the calculations. Other appendices may be added, as needed, after Appendix A.

APPENDIX A: COMPUTER CODES AND CROSS SECTIONS

Appendix A is reserved for a detailed description of the codes, options, and cross section data used in the calculations. At a minimum, the following information should be included in Appendix A.

A.1 Name(s) of code system(s) used.

A.2 Bibliographic references for the codes used.

A.3 Origin of cross-section data (e.g. ENDF/B-VI, JEF-2.2, JENDL-3.2, etc.) (describe deviations of standard libraries, e.g. mix from different libraries, details)**.**

A.4 Spectral calculations and data reduction methods used (describe calculational scheme, through a graph and explanatory words provide details about assumptions made)**:**

- Resonance shielding: specify method(s) and specify energy range, and the nuclides (actinides, clad, fission products, oxygen, unresolved resonance treatment);
- Mutual shielding (overlapping of resonances);
- Fission spectra: specify whether only a single spectrum was used or a weighted mix from all fissile nuclides, explain procedure;
- Describe how the (n,2n) reaction was treated;
- Weighting spectrum for scattering matrices, e.g. correction of the out-scatter and self-scatter terms considering the differences between the original weighting spectrum and realistic cell spectrum.

A.5 Number of energy groups or continuous energy used in the different phases.

A.6 Cell calculation:

- Type of calculation (i.e. heterogeneous, homogeneous);
- Theory used (diffusion, transport);
- Method used (finite difference, finite elements, nodal, S_n (order), collision probability, Monte Carlo, J+/-, etc.);
- Calculation characteristics (meshes, elements/assembly, meshes/pin, number of histories, multi-group, continuous energy, etc.).

A.7 Other assumptions and characteristics.

A.8 Typical Input Listings for each code system type. (Unique and/or important features regarding the input may also be discussed just prior to the input listings. Listing titles refer to the case number and number of the table in Section 4.0 that gives the calculated result.)

NUCLEAR CONSTANTS

Atomic densities are based on a consistent set of basic nuclear constants. Unless specifically stated otherwise, all nuclear constants are taken from "Nuclides and Isotopes," Fourteenth Edition, General Electric Nuclear Energy Operations, 1989. Where atomic densities are provided in an experimental report, and the values of Avogadro's Number and the atomic weights that were used by the experimenters to determine the atomic densities are known, reported atomic densities are adjusted to be consistent with the nuclear constants given in this section. Values from the consistent set that are used in the evaluations are given below.

Avogadro's Number $6.0221 \times 10^{23} \ \frac{\text{atoms}}{\text{gram} - \text{mole}}$

TABLE 1. Atomic Weights.

Nuclide or Isotope	Atomic Weight
^{1}H	1.0079
^{2}H	2.0141
^{6}Li	6.0151
Li	6.941
Be	9.0122
B	10.811
^{10}B	10.0129
^{11}B	11.0093
C	12.011
N	14.0067
O	15.9994
F	18.9984
Na	22.9898
Mg	24.305
Al	26.9815
Si	28.0855
P	30.9738
S	32.07
Cl	35.453
K	39.0983
Ca	40.078
Ti	47.88
V	50.9415
Cr	51.996
Mn	54.9380
Fe	55.847
Ni	58.69
Cu	63.546
Zn	65.39
Ga	69.723
Sr	87.62
Zr	91.224

TABLE 1. Continued.

Nuclide or Isotope	Atomic Weight
Nb	92.9064
Mo	95.94
^{99}Tc	98.9063[a]
Ru	101.07
Rh	102.9055
Ag	107.8682
^{107}Ag	106.9051
^{109}Ag	108.9048
Cd	112.41
In	114.82
Sn	118.71
^{129}I	128.9050 [a]
Cs	132.9054
Ba	137.327
La	138.9055
Ce	140.115
Nd	144.24
Sm	150.36
^{144}Sm	143.9120
^{147}Sm	146.9149
^{148}Sm	147.9148
^{149}Sm	148.9172
^{150}Sm	149.9173
^{152}Sm	151.9197
^{154}Sm	153.9222
Eu	151.96
^{151}Eu	150.9198
^{153}Eu	152.9212
Gd	157.25
^{152}Gd	151.9198
^{154}Gd	153.9209
^{155}Gd	154.9226
^{156}Gd	155.9221
^{157}Gd	156.9240
^{158}Gd	157.9241
^{160}Gd	159.9270
Dy	162.50
Hf	178.49
Ta	180.9479
W	183.85
^{182}W	181.9482
^{183}W	182.9502
^{184}W	183.9509

[a] G. Audi, O. Bersillon, J. Blachot, A.H. Wapstra, Nuclear Physics A 624 (1997) p. 1-124. And Updates of March 2000 at Atomic Mass Data Center (A.M.D.C.).

TABLE 1. Continued.

Nuclide or Isotope	Atomic Weight
^{186}W	185.9544
Au	196.9665
Pb	207.2
^{232}Th	232.0381
^{231}Pa	231.0359
^{233}U	233.0396
^{234}U	234.0409
^{235}U	235.0439
^{236}U	236.0456
^{238}U	238.0508
^{237}Np	237.0482
^{238}Pu	238.0496
^{239}Pu	239.0522
^{240}Pu	240.0538
^{241}Pu	241.0568[a]
^{242}Pu	242.0587
^{241}Am	241.0568
^{242m}Am	242.0596[b]
^{243}Am	243.0614
^{242}Cm	242.0588
^{243}Cm	243.0614
^{244}Cm	244.0627
^{245}Cm	245.0655
^{246}Cm	246.0672
^{247}Cm	247.0704
^{248}Cm	248.0723
^{252}Cf	252.0816

[a] "Chart of the Nuclides," Thirteenth Edition, General Electric Company, 1984.

[b] G. Audi, O. Bersillon, J. Blachot, A.H. Wapstra, Nuclear Physics A 624 (1997) p. 1-124. And Updates of March 2000 at Atomic Mass Data Center (A.M.D.C.).

COMMONLY USED SYMBOLS AND TERMS

A	mass number
A_f	atom fraction
A_w	atomic weight or mass (g/mole)
at.%	atom percent
B^2	buckling (cm^{-2})
β_{eff}	effective fraction of fission neutrons that are delayed.
C	Dancoff correction factor
D	diameter
Δ	change in quantity [e.g., neutron multiplication factor, Δk; buckling, ΔB^2; tank height, ΔH; radius, ΔR; etc.]
δ^{28}	ratio of ^{238}U fission to ^{235}U fission
δ^{25}	ratio of epithermal to thermal ^{235}U fission
H	height
k	neutron multiplication factor - The subscripts "eff" and "∞" are used to denote the effective multiplication factor, k_{eff}, and the multiplication factor for an infinite system, k_∞.
Λ	prompt neutron lifetime
m	mass
M	molarity (moles/l)
M	neutron multiplication $M \cong \frac{1}{1 - k_{eff}}$
M_w	molecular weight or mass (g/mole)
N_A	Avogadro's number [6.0221×10^{23} (atom, molecules, etc.) per mole]

N_i atomic density (atoms/barn-cm) - The subscript "i" is a general descriptor used to denote either the standard elemental symbol (e.g., N_H, N_O, N_{Pu}) or the isotopic mass number (e.g., N_{235}, N_{238}). For multi-elemental systems where isotopes of one element could be confused with those of another element, both the elemental symbol and the mass number are used (e.g., N_{Pu238}, N_{U238}).

N^a excess acid (moles/ℓ)

R or r radius

ρ reactivity: $\rho \equiv \frac{k_{eff} - 1}{k_{eff}}$, sometimes denoted in units of \$ $\equiv \frac{\rho}{\beta_{eff}}$, where β_{eff} is the effective fraction of fission neutrons that are delayed.

ρ_i density (g/cm^3 or g/ℓ) - The subscript "i" is a general descriptor used to denote the nuclide or compound for which the density is given (e.g., $\rho_{UO_2NO_3}$, ρ_{H_2O}, ρ_{Pu}, ρ_{HNO_3}).

σ statistical uncertainty associated with Monte Carlo calculations

σ_i microscopic cross section absorption (i=a), fission (i=f), scatter (i=s), capture (i=c), total (i=t)

Σ macroscopic cross section or summation [e.g., Σ_a, Σ_f, Σ_s, Σ_t are macroscopic absorption, fission, scattering, and total cross sections; $\sum_{i=1}^{m}$ is a summation over the range: i = 1 to i = m].

V volume

V_f volume fraction

W_f weight fraction

wt.% weight percent

Note: When an index "i" is used in conjunction with another subscript, the two are separated by a comma (e.g., $W_{f,i}$).

Appendix on Guidelines for Uncertainties

A section should be added here or elsewhere describing definitions and rules to be applied for describing uncertainties. The basis for this will be the draft 'uncertainty guide' of ICSBEP that needs to be reviewed in the light of reactor physics experiments to fit the needs of IRPhE. In particular the issue of correlation needs to be addressed thoroughly and the methods to be used for expressing technological uncertainties need to be added.